



A Different Kind of Web-Based Knowledge Management: The DTRA Acquisition ToolBook

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Knowledge management (KM) is composed of practices deployed by organizations to identify, create, represent, classify, and disseminate knowledge for reuse, awareness, and learning to the benefit of information users. This article demonstrates the practical integration of the principles of KM and business processes by the Defense Threat Reduction Agency (DTRA). In this example, a technology-centric approach to knowledge sharing and utilization was adopted to design a simple Web-based system that provided highly needed "how-to" and reference information to DTRA acquisition professionals. The Acquisition ToolBook's successful development and deployment effectively integrated KM with internal process management, and it permitted a systemic review of the acquisition process for ineffective procedures and policies.

The idea for the Web-based DTRA Acquisition ToolBook¹ originated as a result of an information environment characterized by acquisition task and process information that was scattered throughout a myriad of DTRA Web sites as well as shared and private drives—or the information was simply not available in any capacity. This unfavorable environment was exacerbated by the DTRA being the merged product of five different defense agencies and programs. Like similar government offices, the DTRA was a hotbed of hide-and-seek information hoarding that was not conducive to efficient acquisition operations. Searching for acquisition data was becoming so difficult and time-consuming that it periodically exceeded the anticipated time for actual task completion. The DTRA had to develop a single and easily accessible, centralized, and functionally based repository of approved information, documentation, procedures, references, and processes. As well, it had to be available to all acquisition professionals, on a single page, located on the agency's main portal.

The ToolBook is not a large, DoD-wide acquisition system such as the previous Acquisition Deskbook, the current Acquisition Knowledge Sharing System, or the future Big A² DoD Acquisition Portal. Those Big A portals serve a broader purpose of acting as comprehensive repositories of acquisition information and collaboration. In the trenches, though, project managers are looking for smaller, simpler, and faster portals of information that quickly offer a how-to and the reference information needed to perform the various complex acquisition tasks without extensive data mining and infinite search activities. The ToolBook information environment was designed to make information easily found and accessed through a single location on the agency-level enter-

prise information system. More importantly, this micro-level site provides important agency-specific acquisition information and processes. The ToolBook serves as the agency's graphic interface, portraying the entire agency acquisition process represented through 24 activity boxes of related acquisition information and tasks. Every government agency could easily have a similar system.

The Blueprint to an Effective Information Environment

The ToolBook not only provides needed acquisition information, but it also includes a detailed process map of required acquisition tasks to guide the agency's acquisition professionals. Smaller, simpler, and faster were the hallmarks of the successful acquisition portal. In the ToolBook's development, users new to defense acquisition tested the system. Their positive feedback proved what the DTRA was aiming for: The ToolBook was successful in walking them through the tasks and activities required of the acquisition effort, and then gave them the tools, examples, forms, and references to do the job. In elevating the utility of KM, the ToolBook integrates both an extensive library of easily accessible acquisition how-to and reference information with acquisition processes and procedures. It merged the *what you need to do* with the *how and when to do it* information.

The ToolBook is based upon an integration of Microsoft SharePoint, Adobe Flash, and Microsoft .NET application software tied to a Structured Query Language data server. This combination facilitates simplicity, speed of access, and use, and provides system flexibility with a broad array of technical features beneficial to system users. By preventing infinite search activities, the ToolBook improves the speed and effectiveness of the user's

acquisition task completion. The critical acquisition information provided by the ToolBook was tailored to meet the information needs of program and project managers. However, it also benefits contracting officer representatives, contract specialists, and program analysts by assisting them in the performance of their specific acquisition and procurement functions.

The ToolBook represents a merger of KM, process management, and operational simplicity. Personnel cannot access the information needed if it is too difficult to locate. Whether designing a local information system or a DoD-wide information portal, the fundamental principles of successful Web-based KM systems are the same:

1. Minimize bells and whistles and maximize quick access and simplicity of operation.
2. As the level of site complexity and menus rise, the level of user utility diminishes.
3. Needed information should be no more than three-to-five mouse clicks to user acquisition, with three being the technical objective.
4. Keep the site menu structure as shallow as possible.
5. A graphics-based system is normally more user-friendly than a text-based system, and a duplex system (a system that uses both text and graphic-based methods to retrieve information) can be more effective than a graphics-based system alone.
6. Focus system design and technical architecture on speed, easy access, and simplicity.
7. Accurate and intuitive titling of data descriptors, menus, titles, or entry points is extremely important.
8. Organize information by process, activities, functions, and organization (as appropriate for your needs).

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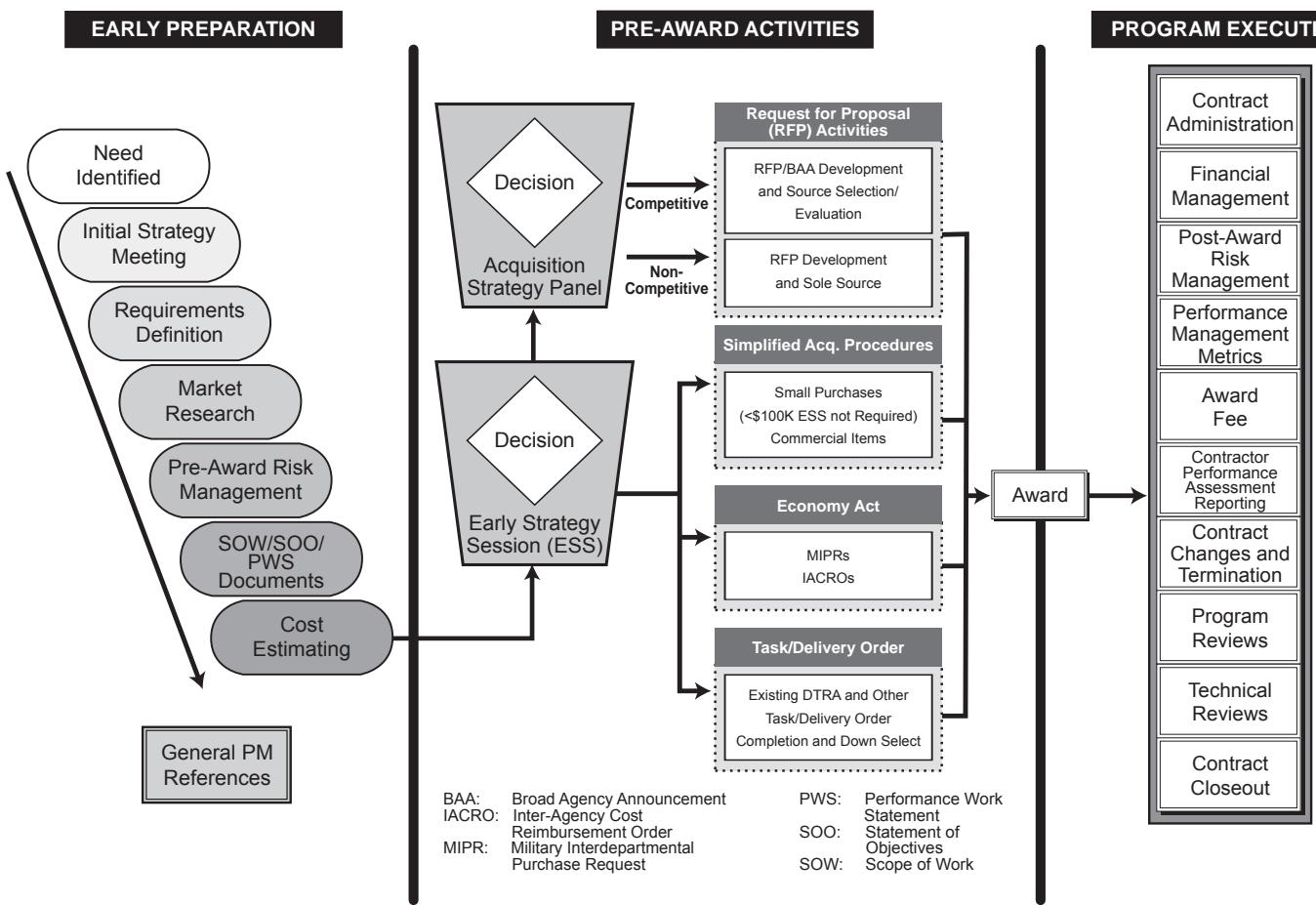


Figure 1: The DTRA Acquisition Process

ToolBook Structure

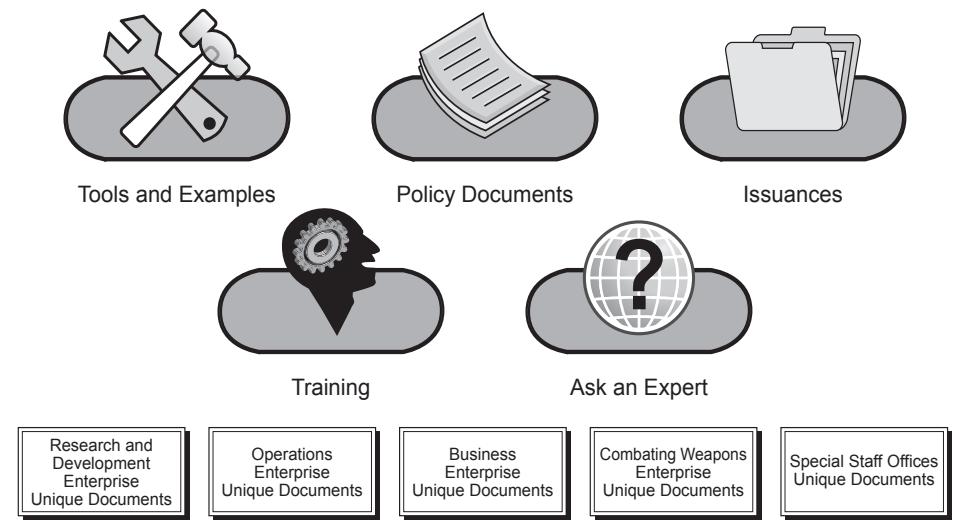
In this particular architectural design, the ToolBook was structured to follow the DTRA acquisition process from program start to program closeout activities (see Figure 1). The site's home page is divided into three broad phases: Early Preparation, Pre-Award Activities, and Program Execution. Early Preparation contains the initial activities required for up-front acquisition project planning and organization. The Pre-Award Activities section includes all follow-on acquisition and contractual efforts to get the acquisition awarded and on-contract. The Program Execution section contains information on the post-award phase, which includes program management (PM) and oversight activities required to administer and execute a successful program. The ToolBook home page graphic portrayal of the DTRA acquisition process is organized into 24 activity boxes that form a logical progression of the work activities required to get an acquisition effort on-contract and executed. There is also one box entitled *General PM References* that contains broad-based or overarching documents that do not fit into any one activity box category. Although the ToolBook is primarily a graphics-based acquisition portal,

it is actually composed of a duplex architecture that can use a graphically-based methodology to search and retrieve data or a text-based library view that can quickly locate and more effectively display related task data. The choice of method used is based on the user's preference. Providing the user with information display options increases a program's utility.

There is only one main sub-level menu for each activity box in the main

ToolBook that houses the majority of documents, making users no more than three mouse clicks away from most of the information they need (see Figure 2). There is also one third-level menu for unique enterprise-level documents. Within each activity box in the second-level menu are separate icons for the following six KM information areas: Tools and Examples, Policy Documents, Issuances (which contains guides, manuals, hand-

Figure 2: The Sub-Level Menu for When A User Need Is Identified



books, etc.), Training, Ask an Expert, and Enterprise-Unique Documents.

The ToolBook uses a *progressive information* approach to information classification and management. For example, if a project manager is unfamiliar with award fee contracts and requires information on how to write an award fee plan, the ToolBook offers a progressive level of knowledge to help the user get the job done. First, the user would select the Award Fee activity box. When the second-level menu appears, the five main icons provide a graduated pyramid level of information. The Training icon would provide the user with basic information on the concepts, responsibilities, and requirements of award fee contracts and issues. If more detailed information is required, the Issuances icon—which includes an array of in-depth guides, manuals, handbooks, standard operating procedures, and standard operating instructions—will provide a multitude of detailed information on the subject. Once training and/or detailed information is accessed on the subject, the user can select the Tools and Examples icon that provides the actual examples, checklists, and templates needed to help complete the task at hand. The Policy icon provides any relevant policy memoranda on the subject.

As an avenue of last resort, the ToolBook also features a sophisticated Ask an Expert capability that permits users to send acquisition-related questions to agency experts on the subject. For enterprise-unique processes, procedures, and instructions, users can also access their own enterprise's menu of key documents managed by each enterprise. The ToolBook also includes a directory of Internet links to nearly all key agency and DoD acquisition references as well as to Web pages explaining how to perform subsidiary tasks (such as the completion of travel forms required for the Defense Travel System). The ToolBook also supports a document search function and a library view capability that can simultaneously display documents by each category (for a particular activity box) for all documents.

Pros and Cons

The ToolBook system incorporates numerous advantages to both users and system administrators. It is designed for a low user investment in time and training, and also for low administrative burden. The Microsoft SharePoint 2007 architecture is easy for system administrators to manage, and offers powerful features. With some customization during the development process, it is easy for content managers to

load document files and links into the ToolBook library. Adding, deleting, and modifying documents is a simple process. Formal user training classes are not required; a narrated internal virtual tour movie provides users with an overview of the entire ToolBook site. After an initial promotional campaign and scheduled system demonstrations, the site is ready for full operation upon release. Although it would be recommended to split the responsibilities of system administrator/developer and content manager, the DTRA ToolBook development, administrator, and content management tasks are assigned to one individual. Furthermore, the Ask an Expert function is also managed by the system administrator. Finally, system capability is easily expandable and the initial system development cost is low using proven software such as Microsoft SharePoint, Adobe Flash, and Microsoft .NET programming.

Like similar systems, there are some drawbacks. System data content must be reviewed for validity and utility, and to ensure that it includes updated information at least every three to six months. This could require the individual reassessment of hundreds of documents quarterly if they are not linked to golden sources³. Long-term system maintenance support will be required from either internal IT resources or an outside contractor. Periodic changes may be needed that require programming modifications, and future updates and development efforts will require IT support. Additionally, some users may have difficulty locating needed information if they do not have a minimum understanding of the Federal Acquisition Regulations process. The content manager may have to place a document in more than one activity box, resulting in some redundancy, but reducing search time.

Conclusion

The *Little A* principles of acquisition KM appear to apply to Big A acquisition portals. Both have a specific set of users that demand similar attributes regarding system operability: Operational simplicity, swift data location and extraction, and a logical taxonomy and data organization scheme to find and manipulate acquisition data. The fusion of the key principles of KM and specific organizational processes represent a merger of KM, process management, and operational simplicity—the foundational triad of successful user information systems. The DTRA Acquisition ToolBook has effectively managed to integrate the positive elements of portal and

process development to the benefit of its acquisition workforce.♦

Notes

1. Any military or civilian government agency interested in developing their own Acquisition ToolBook can arrange a ToolBook briefing and demonstration at the DTRA by contacting Dr. Avery.
2. For those not in the acquisition business, *Big A* addresses issues such as requirements generation, program and budgeting, sustainment, development, production, strategic planning, major milestone processes, and the procurement process. *Little A* is procurement or acquisition in its narrowest sense.
3. Golden sources are those that are automatically updated by the source organization that either created or is responsible for updating the document (as required).

About the Author



Joseph P. Avery, Ph.D., is the DTRA's acquisition program manager for the Acquisition Web ToolBook and manager of acquisition and program management training with 31 years of military, federal, and defense contractor service. In 2008, he was awarded the DTRA's annual Director's Award for Acquisition Management Excellence. Avery has served as deputy and acting chief of the F-16 Fighter Production Operations Division, the B-2 Bomber avionics Acquisitions Officer (AO); the Maverick tactical air-to-ground missile AO, an International Politico-Military Affairs officer, and as a researcher for the AF Institute for National Security Studies. Avery has also been an assistant professor of government, foreign, and national security affairs at the USAF Academy and an associate professor of defense and aerospace studies at the University of North Carolina, Chapel Hill. He is a Level III-certified program manager and has a doctorate in political science and public policy, master's degrees in business administration and criminal justice management, and a bachelor's degree in political science and public safety administration.

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